THE

AMERICAN REVIEW OF TUBERCULOSIS
ABSTRACTS OF TUBERCULOSIS

VOLUME XVII FEBRUARY, 1928 ABST. NO. 2

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Tuberculosis Aphorisms.—It cannot be justifiably concluded that apical tuberculosis is the source of origin of the severe progressive pulmonary processes. This conclusion has led to great psychical harm to those being treated. In many cases it has unjustifiedly been used as an indication for the interruption of pregnancy. Even the necessity for sanatorium treatment in these cases may be questioned. In the majority of apical affections a few weeks at a recuperation home suffices. Fever in itself can be no basis for sanatorium treatment. Certain reservations also are necessary in the presence of exudative processes. The clinical picture of tuberculosis, as a whole, is dependent upon endogenous residua. After many years a nonspecific injury can cause a flaring up of an apparently healed disease process. The word "healed" should be used with great caution.—*Aphoristisches zum Tuberkuloseproblem, G. Baer, Ztschr. f. Tuberk., 1926, xlvi, 275.*—(*H. J. C.*)

Brehmer as Hygienist.—In the development of public hygiene the basic views expressed by Brehmer on the origin of phthisis and his teachings on disposition to the disease are important.—*Hermann Brehmer als Hygieniker, M. Hahn, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 109.*—(*H. J. C.*)

Need for Tuberculosis Research.—The problem of the relation between human and bovine tuberculosis raised by Koch has been replaced by the larger one of the interrelation of all types of tubercle bacillus. Little by little our ideas of the infection are changing, but as yet we know little of the relationships between the bacillus and its various hosts, or of the effect that one may exercise upon the other. A disease as universal as tuberculosis, with the capacity of attacking human beings and most, if not all, species of animals, is worthy of the most painstaking thought and work, for it offers problems that will not be solved in a day. It is important, both in the field and the laboratory, to study the disease; to ascertain the degree of danger from each of many different sources of infection, the degree of natural and acquired resistance, and to look into the possibility of artificial immunization. The part played by swine in avian tuberculosis, the significance of *BCG* in immunizing against the disease, the further purification and study of tuberculin,—all these and many more questions demand study; and to study tuberculosis adequately requires money. In reference to *BCG* it may be remarked that careful "analysis of the evidence submitted, and the lack or insufficiency of control experiments, lead one seriously to doubt the

conclusions made, especially as these, for the most part, are based upon the apparent freedom from tuberculosis of young vaccinated cattle, of which the large majority are males that reached the abattoir under three years of age." No conclusion can really be drawn yet, but the real test must come after vaccinated cows have passed through the "strain of reproduction and heavy milking, and have withstood the test of time." These are a few of the questions now pressing for solution.—*Tuberculosis Research: Its Trend and Need, E. A. Watson, J. Am. Vet. Med. Ass., November, 1927, lxxii (n.s., xxv), 145.*—(*H. S. W.*)

Incidence of Tuberculosis among General Autopsy Material.—Statistical tuberculosis material from the prosector of the Hamburg hospital, in which the usual cases include sudden traumatic deaths and suicides, is presented. The study covers the period of 1919 to 1924, and includes 3,041 cases which were examined for tuberculous lesions. All caseous and calcified lesions were viewed as definite tuberculosis. These were found in only 413 (13.6 per cent) of the cases, and 230 showed cicatrices or callosities. In women the figures were slightly lower than in men. Among the males tuberculosis was most common from the third to sixth decade. Definite tuberculous processes appeared to be mostly bilateral, but in unilateral conditions the right side predominated over the left. Tuberculous changes were most frequent in the lung by far, and the intestinal route of infection appeared to be rare in this locality. The typical Ranke primary complex was rarely found. In 25.7 per cent of the 413 cases there was actual tuberculous disease, which in 9.9 per cent was the cause of death. No appreciably greater amount of tuberculous infection was found among those dying from disease as compared with those dying from other causes. Fresh exacerbation around old calcified lesions were found more frequently among suicides.—*Über die Häufigkeit der menschlichen Tuberkulose und einige mit dieser zusammenkängende Tuberkulosefragen, H. Koopmann, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 131.*—(*H. J. C.*)

Distribution of Tuberculosis throughout World.—The mortality in France is higher than in Germany, England, Belgium, Spain or Italy. The departments of the North and West are most affected. It increases proportionately to the density of human population. Next to Europe, Asia has the highest mortality. The Chinese villages are badly affected, while the rural regions of South China are much less so. In South America and Australia there are numerous foci of European importation and in Mexico and the United States the statistics are comparable to those for Europe, accounting for 66 per cent of deaths. The influence of climate is nil. The War caused a recrudescence, above all, in Serbia and Poland. In France there has been an increase of mortality in returned soldiers and women in industry. In the French colonies infection is widespread. The coastal towns of Africa are highly infected, the figures rapidly diminishing toward the interior. Senegalese soldiers in the French military cantonments develop manifestations like those seen in children, often very grave. In Indo-China tuberculosis is progressively increasing and in Cochin-China it is already widespread. At Saïgon Benard and his collaborators are in charge of the antituberculosis campaign, and have created an effective service for detection, treatment and prophylaxis. Vaccination by Calmette's *BCG* is being carried out in young infants in Indo-China, Madagascar and East Africa, and on French West African contingents bound for metropolitan stations who have a negative skin test. The laboratories at Saïgon, Dakar and Tananarive are supplied by the Institut Pasteur from Paris with facilities for making vaccine. As it is impracticable to scatter urban populations antituberculosis measures must meet the conditions of modern civilization.—*La diffusion de la tuberculose dans le monde et notamment dans les Colonies françaises, Abbatucci, Presse Méd., January 30, 1926, no. 9, 139.*—(*A. P.*)

Tuberculosis in British Navy.—The death-rate from tuberculosis in the British navy is somewhat higher than the civil rate, especially among young adults. It must be borne in mind, however, that the population of the navy is composed largely of men in the young adult group. The rate in the merchant service resembles closely that of the navy. In civil life, occupations related to a high death-rate from phthisis have been those influenced by (1) alcohol, (2) dust and (3) increased exposure to infection. Sailors and seamen have actually but little contact with alcohol or dust. Those seamen doing the harder labor have a lower incidence than those leading sedentary lives (writers, wireless operators, etc.). The modern seaman does less manual labor, but he is more below decks or indoors and away from the sunshine. There is no evidence that the sailor is more exposed to infection than other people in the general population. It would appear that the chief

factors in determining the incidence of tuberculosis in the navy are (1) general health of the recruit, that is, the civil population, (2) food of the recruit under training, and (3) the amount of sunshine and lack of sunshine.—*The incidence of Tuberculosis in the Royal Navy, C. H. Dawe, J. State Med., June, 1927, xxxv, 341.*—(*H. S. W.*)

Tuberculosis in Sardinia.—The population of Sardinia in 1921 was 864,174. The mortality from tuberculosis in the period 1908–1914 was 16.1 per 10,000 among males and 26.1 per 10,000 among females. For the period 1921–1923 the rate was 204 per 100,000 inhabitants. The increase in the tuberculosis death-rate is due to the great and progressive overcrowding in small localities. There is marked deficiency in proper ventilation, sanitation and alimentation. The poor domestic conditions render the females especially susceptible, and they form the main sources of infection. In some localities the disease appears to be strictly familial. Education of the people in hygienic matters and protection for the working classes are sorely needed. Infant welfare clinics, hospitals and sanatoria are very necessary.—*Le tristi piaghe della Sardegna; la Tuberculosi, S. Collari, Tubercolosi, xix, July 1927, 276.*—(*U. E. Z.*)

Tuberculosis in Tropics.—In opposition to the earlier observations among the Javenese, in which it was maintained that there was among the young women a tendency toward exudation and generalization, as well as an undue frequency of marked involvement of the lymphatic system, it was shown that among the cases dying of nontuberculous conditions there were found as high as 13 per cent of old tuberculous foci. Among the acute cases there were about one-third that revealed old calcified lesions, indicating a successful overcoming of the first tuberculous infection.—*Beitrag zur Frage der Tuberkulose in den Tropen, H. Heinemann, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 598.*—(*H. J. C.*)

Tuberculosis among School Children of Kiel.—An examination of 956 school children in Kiel indicates that tuberculosis among the girls increases with age. A higher percentage of infection occurs where contact with open cases of pulmonary tuberculosis exists. Roentgen examination outranks clinical examination in determining the presence of primary and secondary tuberculosis. Among 5 cases of fresh primary infiltrations 4 were discovered by X-ray alone, and among 23 active hilum-tuberculosis cases 3 were discovered as such by roentgen raying. These 7 cases would not have been diagnosed without the X-ray and therapy could not have been instituted. As a rule the tuberculous disease resulted from frequent or massive infections resulting from residence with open cases of tuberculosis. External influences, such as influenza, can cause an outbreak of manifest tuberculous disease in an infected child without there having been a new infection.—*Schulärztliche Untersuchungen an Kieler Schulkindern auf Tuberkulose, L. Brunn, Beitr. z. Klin, d. Tuberk., 1926, lxiv, 543.*—(*H. J. C.*)

Tuberculosis among Nursing Personel.—The study covers the period of 37 years in the Eppendorf Hospital and includes 4,284 nurses and nuns. There were 150 of these afflicted with tuberculosis, and 17 of them were open cases. The percentage up to 1918 was 1 per cent, after which it increased to 4.6 per cent. The nuns were afflicted most frequently between the ages of 20 to 24 years, and the disease made its appearance in from 3 months to 2 years after entering the service. Twelve of the cases died. In all these cases, with one exception, there was a typical tertiary phthisis of the adult. Etiologically, the condition was looked upon mainly as a professional condition rather than one contracted at the tuberculosis station. Overexertion and weakness of resistance from other infectious diseases were significant.—*Die Tuberkulose des Pflegepersonals, Mücke, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 155.*—(*H. J. C.*)

Bavarian Prisons and Tuberculosis.—The Bavarian prison conditions during the year 1925 are presented. The number of tuberculosis cases has diminished, having reached the lowest figures during the past six years. In the penitentiary tuberculosis is rarer than in the jails. The number of acute cases is extremely low. The 1924 diet has proved satisfactory. Commutation of sentence on account of tuberculosis is rare. It is advisable to maintain a separate division for tuberculous prisoners.—*Strafvollzug und Tuberkulose, E. P. Hellstern, Ztschr. f. Tuberk., 1926, xlvi, 44.*—(*H. J. C.*)

Difficulties of Control of Tuberculosis.—During the year 1922 tuberculosis caused 43,000 deaths in England and Wales, and this was approximately 9 per cent of the total deaths from all causes for the year. Several factors which contribute this high rate concern (1) reporting of the disease, (2) economic difficulties and (3) housing difficulties. To report every case of tuber-

culosis is required by law of every practitioner, all charitable agencies, and the ministry of pensions, and failure to report means failure to provide sanatorium care for the patient. But reporting is poorly done. Of 1,239 deaths from tuberculosis in Liverpool in 1923, inquiry revealed that no reports were made before death in 22 per cent; that reports were made within one month of death in 13 per cent, within twelve months of death in 34 per cent, and over twelve months before death in 31 per cent. Since the average duration of tuberculosis from onset to death is about four years, it is apparent that a large majority escape most of the preventive or therapeutic measures that might otherwise be available. In the same year 25 per cent of the new cases reported could be written down as hopeless, and these, or an even greater proportion, have escaped the machinery for treatment, isolation and the prevention of spread. What are the reasons of this faulty reporting? These concern first the patient, who fails to consult the doctor because the gradual onset of the disease has gone unnoticed; he has thought the illness would disappear without medical attention; he has feared the diagnosis of tuberculosis and the life in a sanatorium associated with the diagnosis; or he has kept at work for economic reasons. They likewise concern the physician, who fails to report through inability to make the diagnosis because of a hurried examination, lack of skill, etc., through acquiescing to the wish of the patient in not wanting to be reported, through forgetfulness, or through believing that another doctor has already reported the case. If the doctor would do his part in the matter, the patient might come around, through better education, to the point of doing his. Economic difficulties are also important in the death-rate. The spectre of indebtedness, poverty and perhaps loss of home if he goes to a sanatorium has kept many a breadwinner out of such an institution or permitted him to remain too short a term. In Liverpool during 1922, 40 per cent of 1,036 patients left sanatoria before they had completed a stay of three months, 36 per cent left after less than six months, 18 per cent remained for longer than 6 months, and 6 per cent for longer than one year. Most of these early departures are prompted by economic conditions at home. Heavy indebtedness of the family (and the entire problem must be looked upon as a family problem) upon return from the sanatorium and the inability to procure work under which the patient will not be likely to suffer another breakdown are very real factors in the high death-rate. There is need for better machinery to care for the dependent family of those under treatment, adequate employment for the quiescent case, rearrangement of the home so as to increase the earning capacity of the whole family, and finally temporary financial assistance. The public-health authorities may eventually be obliged to provide remunerative employment for the returned sanatorium patient who is unable to secure adequate work that does not entail too great a risk to his health. Housing difficulties with crowding and shortage of houses since the war are serious in the campaign against the disease, but the increase in sanatorium accommodations has offset that to some extent.—*Difficulties in the Campaign against Tuberculosis, B. T. J. Glover, J. State Med., June, 1927, xxxv, 333.*—(*H. S. W.*)

Urban Tuberculosis Problems.—In Birmingham, England, which is predominantly an industrial city, the death-rate for tuberculosis in 1921 varied interestingly with respect to the different parts of the city. In the seven central wards the rate was 299 per 100,000; in the middle ring of wards it was 204, and in the outer ring of thirteen wards it came to 146, the difference being probably attributable to poverty, bad housing, bad personal and domiciliary hygiene, and ignorance of the general laws of health. It is in respect particularly to the latter factor that much valuable work can be done by the antituberculosis movement. Ignorance and poverty, especially the latter, were responsible for the fact that, of more than 2,000 reported cases of tuberculosis that were visited, over 50 per cent were found to be sharing a bed with some other member of the family. Despite such conditions, however, in ten years the number of reported cases had dropped from 3,980 to 1,669. The rate for males is nearly twice that for females, even though many women have entered industrial occupations. The baneful influence of urban life upon tuberculosis has probably been greatly overemphasized; and, although such an influence does exist to some extent, more account should be taken of certain urban industries which have a sinister reputation, as, for instance, scissors and filemakers, brassworkers and shoemakers. Of 502 deaths (1921) from pulmonary tuberculosis, 9.2 per cent were among brassworkers, probably because of, according to Collis, (1) sedentary life, which means closer contact and increased opportunities for infection, (2) the alcohol habit and (3) exposure to dusts. In this city there is one antituberculosis centre which in 1922 had 24,260 visits, and 72 per cent of all reported cases were dealt with in this one centre. This has been proved to be a better

scheme than having several smaller, scattered dispensaries in the city. The medical staff of the dispensary is composed of the medical officers of the sanatoria. There are 610 available beds under control of the public health committee. These are distributed in four sanatoria, three of which are in the city, and the fourth, for cases with better prognosis, in the country. No one hospital receives only the very sick, and thus none acquires a reputation which frightens or repels a patient. For tuberculosis of bones there are 150 beds in two hospitals. There are fifteen trained women who visit the tuberculous sick, informing the patient as to the disposal of sputum, care to protect other members of the household, etc. Compulsory segregation of the tuberculous individual who is a menace to the inmates of the house is not advocated, but there are occasional instances in which the authorities do not hesitate to employ it. Such a course is legal. There has been so much concentration of tuberculosis in sanatoria and dispensaries and among four general hospitals, that adequate training of medical students is difficult if possible. Students should be required to procure special instruction in the diagnosis and treatment of this disease, just as of mental diseases, of the infectious fevers, etc.—*Some Aspects of the Tuberculosis Problem in an Industrial City, G. B. Dixon, J. State Med., May, 1927, xxxv, 266.*—(*H. S. W.*)

County Antituberculosis Model.—In the organization and administration of a county scheme for the prevention of tuberculosis, a consideration of first importance is that the tuberculosis officer be a skilled physician who gives his entire time to the work. He should be a good clinician who would be frequently called in consultation by the practising physician, in addition to carrying on his administrative duties. The county or health unit should be large enough to justify the calling of a first-rate man and perhaps several assistants to the tuberculosis staff. The dispensary constitutes a very important portion of the organization, and its functions should include the diagnosis of patients and contacts, the determination of the type of treatment, the supervision of home treatment, the keeping of records, the distribution of sputum-receptacles, paper napkins, etc., and the keeping in touch with local sanitary authorities. It should be thoroughly equipped, including X-ray apparatus, but it should not dispense medicines. The sanatorium, pulmonary hospital for advanced cases, special hospital for non-tuberculous children, for which there should be one bed to every 10,000 people, and tuberculosis settlement, should all be integral parts of the organization. The annual cost of the scheme in Lancashire, with a population of 1,750,000 people, amounts to about $890,000.—*The Organization and Administration of County Schemes for the Prevention of Tuberculosis, G. L. Cox, J. State Med., June, 1927, xxxv, 324.*—(*H. S. W.*)

Antituberculosis Campaign in Italy.—During the past year the organizations carrying on the antituberculosis work in Italy have been considerably augmented both in personnel and money. The number of institutions have been increased and the program for the future promises many more. There are 194 tuberculosis dispensaries in operation, and many more are in the process of construction. The number of beds allotted to tuberculosis number 10,000. About 8,000 of these are in general hospitals and tuberculosis infirmaries. The sanatorium beds (private and public) amount to about 2,000. A tremendous amount of work is being done in popular education and dissemination of antituberculosis propaganda. Much has been accomplished in the hospitalization and care of tuberculous children. Although there is a great deal yet to do, the agencies interested in this work are bending every effort toward the proper care of the tuberculous in Italy at the present time.—*L'azione pubblica e privata nella lotta antituberculose in Italia Tubercolosi, xix, June 1927, 248.*—(*U. E. Z.*)

Avenues of Tuberculous Infection.—There are three obvious modes of transference of the tubercle bacillus to man, namely, direct contact, dust and droplets. Can the relative merits of these different modes be studied experimentally with animals? We know that some human beings who come in contact with tuberculosis fall ill and that these appear at times to be more resistant but at other times more susceptible to the disease. How can such conditions be approximated experimentally in animals? Many obstacles arise to prevent worth-while deductions from such experiments. It is easy to expose animals to sprays or dust which contain tubercle bacilli. But this does not prove more than that infection of animals by such a method is possible. Recently, much of the earlier work has been repeated, by the examination of dust from rooms of phthisical patients, spraying of sputum on clothes or dusty surfaces and after drying, brushing these articles into the faces of guinea pigs. But nothing new has come of it all. None will be so biased as to deny the possibilities of the dangers of dust. It is the methods of

providing it experimentally that are wrong. Likewise, when a consumptive coughing at guinea pigs produces tuberculosis in a certain proportion of the latter, it is not proved that a man who is in contact with a consumptive must get his infection by breathing droplets coughed up by that consumptive. These contentions signify not so much established ideas as impoverishment of our knowledge. No proof has yet been brought forward which justifies one in supporting either of these ideas as to the mode of infection. Either or both may be correct, but experiment has failed to prove that either is correct.—*Ueber die Infektionswege der Tuberkulose, W. Strauss, Deutsche med. Wchnschr., March 18, 1927, liii, 481.—(H. S. W.)*

Dispersion of Tubercle Bacilli by Coughing.—Ten patients in the first and second stages of pulmonary tuberculosis were employed in a study of the dispersion of tubercle bacilli through droplets formed by coughing. The patients were placed from 20 to 80 cm. from carriers of slides, 80 in number, designed for the deposition of the droplets. Each patient was subjected to the procedure of coughing, from time to time, and on three different days, three times a day, for periods of forty-five minutes. The slides were then stained by the Ziehl-Neelsen technique. It was found that all the patients emitted bacilli, but that the latter were present intermittently. There were more bacilli coughed out in the fall and winter and fewer in spring and summer, more during an attack of acute respiratory disease, and more by ambulant and physically strong persons with strong cough. About one-half of the 80 slides at each exposure contained droplets, as detected by a hand lens, and bacilli in the preparations varied from one to 40. There is no way of calculating the capacity of a consumptive to spread bacilli except by measuring it in some such way as this.—*Zur Frage der Bazillenverstreuung durch Phthisiker, P. Kolf, Deutsche med. Wchnschr., May 13, 1927, liii, 836.—(H. S. W.)*

Experimental Infection with Single Tubercle Bacillus.—It has been usual to determine the virulence of tubercle bacilli by observing the weight necessary to cause an infection, without, however, determining how many bacilli were found in this amount. Lange determined the number of living tubercle bacilli in a suspension by seeding on an egg medium. It was thus shown that a single living bacillus suffices to cause infection when subcutaneously, intracutaneously or intratracheally injected. The primary pulmonary foci resulting after tracheal injection were equal in number to the living bacilli injected.—*Die Feststellung der Zahl lebender Tuberkelbacillen in einer Bacillenaufschwemmung durch das Kulturverfahren und Vergleich dieser Ergebnisse mit dem Infektionserfolg, B. Lange, Ztschr. f. Tuberk., 1926, xlvi, 455.—(H. J. C.)*

Filterable Virus of Tuberculosis.—Injections of filterable virus into guinea pigs confer, at times, a remarkable resistance against a later infection with virulent tubercle bacilli. The problem of heredity in tuberculosis enters with these findings into a new phase. Besides the possibility of an intrauterine infection, the establishment of a definite immunity to tuberculosis by the transplacental inoculation with filterable virus must be considered.—*Virus filtrant tuberculeux et résistance à la tuberculose, F. Arloing, L. Thévenot, A. Dufourt and J. Malartre, Meeting, Acad. d. Méd., October 11, 1927, reported in Prog. Méd., October 22, 1927, no. 43, 1670.—(M. P.)*

Filterable Virus of Tuberculosis.—Following a series of experiments in animals the author obtained consistently negative results in attempting to find a filterable virus of tuberculosis. Animals inoculated with the filtrates gave negative results. He performed a Pirquet skin test with the filtrate upon a child suffering from tuberculosis with negative results. The test was positive in the same child with tuberculin. This work is in accord with the results obtained by other Italian workers, but is at variance with the work of the French school. The author believes that the positive results obtained *in vivo* and *in vitro* by other investigators were due either to technical errors, to an imperfect filter, or to the preëxistence of a tuberculous infection in the animals used for the experiments.—*Ricerche sulla filtrabilita del virus tubercolare, G. Peloso, Tubercolosi, xix, July, 1927, 255.—(U. E. Z.)*

Variability in Virulence of Filterable Virus of Tuberculosis.—The variability in the virulence and pathogenicity of the tubercle bacillus in its various forms is a general concept that appears to be equally applicable to the filterable forms of the tuberculosis virus. The inoculation of guinea pigs with filtrates from human tuberculous lesions produced three types of infection. Besides the nodular caseous tuberculosis and the involvement of the lymph nodes, the authors observed a passing infection of short duration without any manifest lesions. This condition is revealed by intracutaneous injections of a more than ordi-

narily concentrated solution of tuberculin. The virus of tuberculosis can create a temporary tuberculin allergy in proportion to its virulence. The virulence can be attenuated by electric currents or ultraviolet rays and other methods. When this is done the antiallergic period, which is usually from eight to fifteen days in the guinea pig, is increased to twenty-four, thirty-one, forty and fifty-eight days. The period of allergic reaction is decreased from sixty, to thirty, twenty-two and eighteen days. These findings are of interest from the standpoint of the heredity of tuberculosis through transplacental infection as well as the pathogenesis of certain fatal hypotrophic states of the new born.— *Varibilité de la virulence et des effets pathogènes du virus tuberculeux filtrant. Ses conséquences dans le problème de l'hérédité tuberculeuse, F. Arloing and A. Dufourt, Meeting, Acad. de. Méd., November 30, 1926, reported in Prog. Méd., December 11, 1926, no. 51, 1966.*—(*U. E. Z.*)

Filterable Tuberculous Virus and Heredity of Tuberculosis.—The work of certain authors is cited as demonstrating the existence of filterable forms of the Koch bacillus (tuberculous ultravirus of Calmette, *et al.*). Can this tuberculous filterable virus pass through the placental filter as well as through the Chamberland candle? Placental passage of bovine filterable forms was demonstrated in pregnant guinea pigs by Calmette and his coworkers in 1925, as was that of the human type by Arloing and Dufourt. The latter presented conclusive proof of such transplacental passage in an infant born at seven months of a tuberculous mother from whom it was immediately separated. The infant died after 56 days. Autopsy revealed no tuberculous lesions, and most of the inoculations were negative. Only the mesentric lymph nodes contained tubercle bacilli; and the filtrate from these nodes induced a marked cachexia in inoculated guinea pigs with many tubercle bacilli found in their lymph nodes. This result was accepted with reservation, but has recently been strikingly confirmed by Calmette, Valtis, and Lacomme. Of 9 infants or foetuses, without contact with their tuberculous mothers after delivery, it has been possible to find tubercle bacilli by direct examination in three and by guinea-pig inoculation of material from viscera and lymph nodes in all of them. Indeed, Couvelaire had frequently observed a transplacental transmission of filterable tuberculous virus in stillborn babies as well as in those dying of progressive cachexia. The virus, however, does not always have the same degree of virulence, Arloing and Dufourt distinguishing three forms of the disease experimentally produced: namely, the caseous form, the form producing cachexia with bacillary lymphatic infection, and the transient, curable form, manifesting itself only by a temporarily positive tuberculin test. These observations require some modification of our attitude toward inherited tuberculosis, in that we should no longer consider intrauterine infection as exceptional. The fact remains, as the clinical work of the last few years has shown, that in the great majority of cases the infant of a tuberculous mother is born free from intrauterine contamination. Thus, the above observations on intrauterine infection in no way lessen the importance of immediate separation of newly born infants from their tuberculous mothers.— *Virus tuberculeux filtrant et hérédité tuberculeuse, F. Saint-Girons, Nourrisson, September, 1927, xv, 287.*—(*P. J. W.*)

Constitution in Tuberculosis.—It is certain that constitutional strain differences occur within the human type of tubercle bacillus, with marked variation in virulence. Highly virulent strains are rare. Constitutional differences in human beings toward tuberculosis are equally unmistakable. Such widely different abnormal states as diabetes, pregnancy, anergy following infectious diseases, and abnormal condition of thorax and lungs, are important in this relation. The course of tuberculosis varies so much in different genotypical constitutions as to make it obvious that genotypical factors play a great part. In certain families there appears to be a definite, special *Anlage* for the development of severe or fatal tuberculosis. An explanation of this is not possible at this time.—*Die Konstitutionslehre in ihrer Anwendung auf die Entstehung und die Weiterentwicklung der Tuberkulose, Naegeli, München. med. Wchnschr., April 15, 1927, lxxiv, 621.*—(*E. R. L.*)

Tuberculosis Due to Reinfection.—From a statistical survey, it was noted that the frequency of tuberculosis was three times greater in students and nurses engaged in tuberculosis work. This emphasizes the rôle played by massive and repeated infections in the reactivation of tuberculosis. In the discussion Rist stated that tuberculosis is not more frequently observed among nurses on the tuberculosis services than among those associated with other diseases. He found that laboratory workers and nurses in the dispensaries are more commonly affected.—*Les surinfections dans l'étiologie de la tuberculose, A. Pisavy, Meeting, Soc. Méd. d. Hôp., April 8, 1927, reported in Prog. Méd., May 7, 1927, no. 19, 714.*—(*U. E. Z.*)

Tuberculous Infection and Reinfection in Lungs of Adults.—Since every adult, especially in cities, frequently has the opportunity to inhale tubercle bacilli, it must be assumed that, when a fresh anatomical primary complex makes itself determinable in adult life, in the majority of these cases the adult has presented to the bacilli a suitable nourishing soil. Such infiltrations, which are reviewed from the work of other authors, were found to exist 18 times between the ages of 14 and 20 years, 16 times between 21 and 30 years, 9 times between 31 and 40 years, 3 times between 41 and 50 years, and once between 51 and 60 years. These forms of tuberculosis were found in 17.7 per cent of adult cases of pulmonary tuberculosis. They frequently form the beginning of phthisis, and do not as a rule follow the usual course of pulmonary tuberculosis from the apex downward. All of these cases belong to the stage of secondary allergy, according to Ranke. Ickert maintains that these forms of pulmonary tuberculosis really do not fit in with the scheme of Gräff and Küpferle. He noted them when exogenous reinfection was most likely, as well as in those with endogenous reinfection. The important factor in the determination of this disease picture does not depend upon where the bacilli came from, but rather that the body was in a condition suitable for the secondary stage. Allergic variations are considered important in preventing infections in this stage. Such variations are presented especially in pregnancy and the puerperium and during various industrial hazards.—*Phänotype Vorbedingungen für das Angehen von tuberkulösen Infektionen und Reinfektionen in der Lunge des Erwachsenen, F. Ickert, Ztschr. f. Tuberk., 1926, lxv, 291.*—*(H. J. C.)*

Conjugal Tuberculosis.—In a review of 5,000 cases, the incidence of conjugal tuberculosis was 16.8 per cent. When one of the consorts died the mate was found infected in 50 per cent of the cases. For the most part dispensary cases, the usual unhygienic environment is an important factor in these high percentages. Tuberculosis in the mother is the most dangerous contact and is the more frequent in marital tuberculosis.—*Conjugal Tuberculosis, A. Minnig, J. Am. M. Ass., November 19, 1927, lxxxix, 1774.*—*(G. L. L.)*

Pregnancy and Pulmonary Tuberculosis.—Statistics based upon reliable diagnostic criteria show that pregnancy in a tuberculous woman leads to an aggravation of symptoms, to the extension of existing lesions, to the production of fresh ones, and to the flaring up of those which were quiescent. Fifty-two tuberculous women are reported who became pregnant. In 8 the condition was unchanged but became incurable, in 44 the condition became worse. Nineteen died after one year, and 26 died after two years. In 117 cases in which tuberculosis began either during pregnancy or shortly after pregnancy, 60 (51.2 per cent) died after two years; 43 (36.7 per cent) were still alive, but in a serious condition, and leaving little hope of recovery. In the 14 temporarily arrested or quiescent cases, representing 11.9 per cent of the total, pregnancy was the determining cause in the onset of tuberculosis. Abortion has been advocated as the only way to save the life of the mother. It has not been sufficiently proved that abortion is really efficient in arresting the course of pulmonary tuberculosis activated or aggravated by pregnancy. Artificial pneumothorax should be applied to pregnant tuberculous women whenever it is possible; that is, when the lesions are unilateral and when no extensive pleural adhesions are present. That it interferes in no way with pregnancy or labor has been conclusively proved. Fifty-eight cases of pregnant women treated with artificial pneumothorax are reported; 40 had artificial pneumothorax established during pregnancy or shortly after confinement. Of this number 14 are clinically well and 4 have died. If a woman who has been successfully treated by artificial pneumothorax has become clinically well, if she has been two years without expectorating bacilli, and, if her temperature is permanently normal, there is no reason why she should not be allowed to become pregnant; but the collapse should be maintained for at least six months after confinement.—*Relation of Pregnancy to Tuberculosis, E. Rist, Brit. Med. J., August 13, 1927, no. 3475, 247.*—*(W. I. W.)*

Pregnancy and Pulmonary Tuberculosis.—Pregnancy aggravates the course of tuberculosis, particularly the ulcerative type. The ill effects are chiefly observed at the beginning and end of pregnancy and mostly in the postpartum period. Since early abortion frequently yields good results, it is legitimate to interrupt a pregnancy during the first months if aggravation of symptoms or signs occurs. Curettage or subtotal hysterectomy should be done.—*De l'influence de la grossesse sur la tuberculose pulmonaire, Jeannin, Progrès Méd., July 9, 1927, no. 28, 1083.*—*(M. P.)*

Pregnancy and Pulmonary Tuberculosis.—In the majority of cases of latent pulmonary tuberculosis pregnancy exerts no

influence and is, therefore, not an indication for interruption. With manifest tuberculosis interruption is recommended. If the case is of a second or third Turban stage, and during the last three months of pregnancy, efforts should be made to save the child. At the conclusion to every interruption all physical measures should be used in treating the pulmonary disease.—*Beitrag zum Zusammentreffen von Tuberkulose und Schwangerschaft, H. Jünger, Beitr. z. Klin. d. Tuberk., 1926, lxiii, 838.*—(*H. J. C.*)

Pregnancy and Pulmonary Tuberculosis.—As the result of a small series of cases studied, it is believed that in cases of manifest tuberculosis gravidity should be terminated in the first few months of pregnancy. Regarding the use of roentgen raying of the tuberculous lung in pregnancy, as recommended by Menge, it is believed that this should not be tried until further tests have proved its efficacy.—*Der Einfluss der Gestationsvorgänge auf die Lungentuberkulose und ihre Bedeutung für die Therapie, O. Pankow, Centralbl. f. Gynaecol., 1926, l, 2418.*—(*H. J. C.*)

Pregnancy and Pulmonary Tuberculosis.—On account of the unsatisfactory value of clinical statistics the statistics for the total population of Baden, Prussia and Bavaria were reviewed for the period of 1905 to 1922, the data being divided into age and sex groupings on the basis of total mortality, mortality from all forms of tuberculosis, and that from pulmonary tuberculosis. The female mortality from pulmonary tuberculosis reached its maximum during the third decade, but in men a similar curve was found. In comparison with this there was a greater mortality from tuberculosis among the females during the age-period of 0 to 10, and 10 to 15 years. It is concluded that pregnancy, delivery and the puerperium, in the majority of cases, exert very little influence upon an existing pulmonary tuberculosis. They also do not, in the majority of cases, cause a reactivation.—*Bevölkerungsstatistisches zur Lungentuberkulose in der Schwangerschaft, F. Schultze-Rhonhof, Centralbl. f. Gyn., 1926, c, 779.*—(*H. J. C.*)

Tuberculosis Following Childbirth.—A case is reported of a young married woman who had a fifth-month miscarriage. A day later her temperature rose to 103.6°F., and the pulse rate was 125. For more than three months the patient continued to have a septic type of temperature, averaging 102° or 103°F. in the evening, with a daily variation of from 2 to 4 degrees. The roentgen-ray diagnosis was miliary tuberculosis. Autopsy bore out this diagnosis. *Conclusions:* Acute miliary tuberculosis following delivery is undoubtedly more common than is generally realized. Genital tuberculosis may arise primarily by infection from without through the vagina, or may be secondary to a focus elsewhere in the body, notably in the respiratory organs. The strain incident to pregnancy or delivery may cause increased activity of the disease with general dissemination by way of the blood stream, leading to miliary tuberculosis of various organs. When women continue to have fever and repeated negative blood cultures after delivery, acute miliary tuberculosis should be considered. Routine roentgenographs of the chest may be of great diagnostic aid.—*Tuberculosis Following Delivery Originating from Genital Tuberculosis, J. R. Wiseman and H. W. Retan, Arch. Int. Med., July 15, 1927, xl, 65.*—(*W. I. W.*)

Trauma and Tuberculosis.—Aside from inoculation tuberculosis there has been presented no absolutely unquestionable case of traumatic tuberculosis in the literature. A trauma can act in a mobilizing or aggravating fashion upon a tuberculous focus already existing in the body. The cases most likely thus influenced by trauma are those of advanced pulmonary tuberculosis or miliary tuberculosis. In 95 per cent of the cases there is no localizing or mobilizing effect in the sense of causing metastases, but rather an aggravating action in reactivating a quiescent or latent focus. The material studied covered 85,623 accidents within the period of 1918 to 1924, and among these there were 157 in which the question was raised as to whether there was a relation between this and the tuberculosis. In only two cases, that is 1.5 per cent of all tuberculosis cases, the relation between the accident and the tuberculosis could not be disputed.—*Tuberkulose und Trauma, Zollinger, Deutsch. Ztschr. f. Chir., 1926, cxcix, 11.*—(*H. J. C.*)

Trauma and Tuberculosis.—In the lungs only a posttraumatic tuberculosis can exist, since pulmonary tuberculosis can only be occasioned by tubercle bacilli and not by trauma alone. Trauma can give rise to pulmonary tuberculosis when tubercle bacilli are carried into the body by the trauma, infect the lungs and cause tuberculosis there; when the trauma reduces the general immunity or disturbs the formation of protective bodies, so that after the accident virulent bacilli deposit at the site of trauma; or when the trauma so alters the thoracic wall or pleura as to make conditions favor-

able for infection of the lungs. Of 85,623 accident cases occurring over a period of 6 years there were 157 in which it was questioned whether the trauma called forth the tuberculosis. Of the 157 cases 23 were found with pulmonary tuberculosis. The existence of a genuine primary traumatic pulmonary tuberculosis based upon a perforating injury has not been demonstrated. The development of tuberculosis after a thoracic injury can only be considered possible when the trauma has made it possible for the tubercle bacilli to settle and multiply at the site of the trauma, and in a discernible manner occasion disease. Tuberculous lungs can be injured by trauma, and a relation must be based upon the objective traces of the trauma such as skin wounds, haemorrhage, muscle haematomata and rib fractures. The influence of the earlier disease, as a whole, can be better evaluated the fewer the traumatic symptoms. Of 2,639 cases of contusions of the thorax, 966 with fractured ribs, there were only 17 with pulmonary tuberculosis. Only rarely does there occur an activation or detrimental effect on the nontraumatized side after marked chest injuries, for instance, fractured ribs; the injured side is favored and thus a greater burden of work put on the opposite side, which might favor a detrimental outcome on this side. It is not believed that an injury of a normal lung favors the deposition of tuberculosis.—*Lungentuberkulose nach Trauma. Einige kritische Bemerkungen, F. Zollinger, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 1.*—(*H. J. C.*)

War Gases and Pulmonary Tuberculosis.—The clinical experiences of many men have been recorded, and include data on thousands of cases of persons who had been gassed. Only a few instances can be found in the literature in which the opinion is expressed that gassing predisposes to tuberculosis, and there is very little experimental work bearing directly on the subject. In the hope of more definitely settling the question of the relationship between tuberculosis in the ex-soldier and a history of gassing, experiments were conducted in the past three and one-half years, in the course of which 335 rabbits were used. The gases studied were mustard, phosgene and lewisite. In each set of experiments an equal number of controls and of animals inoculated with tubercle bacilli was used. The controls and inoculated animals received the same amount of gas, both as to the time and concentration. In order to simulate the time relations between gassing and infection as it occurred in actual warfare, different groups of animals were inoculated at varying times before gassing, and other groups at varying times after gassing. In the former instances it was attempted to stimulate the reaction of a latent tuberculous lesion toward gassing. In the latter it was attempted to determine the effect of gassing on the beginning of a tuberculous infection. *Conclusions:* These experiments demonstrate clearly that rabbits gassed with phosgene, mustard and lewisite are not more susceptible to tuberculosis than are control animals inoculated at the same time with the same dose of bacilli. The gassing of animals that already have well-developed tuberculosis does not appreciably accelerate the tuberculous process. The sum total of the amount of tuberculosis in all the experiments was slightly less in the gassed animals than in the controls.—*War Gases and Tuberculosis, A. R. Koontz, Arch. Int. Med., June 15, 1927, xxxix, 833.*—(*W. I. W.*)

War Gases and Pulmonary Tuberculosis.—The occurrence of pulmonary tuberculosis in individuals who have been gassed is infrequent. About 40 per cent of the cases have had a series of respiratory infections in the interval following the gassing, which finally lead to the onset of tuberculosis. Phthisis in these patients is of the fibrous type similar to that observed in miners and in cases of pneumonokoniosis.—*La phtisie des gazés, Achard, meeting, Acad. Méd., April 19, 1927, reported in Prog. Méd., May 7, 1927, no. 19, 715.*—(*U. E. Z.*)

War Gases and Pulmonary Tuberculosis.—The term *anciens gazés* should be reserved for those patients who have been subjected to a severe intoxication, in consequence of which they have definite and permanent sequelae. Otherwise, almost all front soldiers would have to be considered as "gassed." The diagnosis of pulmonary lesions caused by gassing and associated with tuberculosis is difficult, particularly when the former manifest themselves as bronchopulmonary fibrosis, with or without bronchial dilatation. A causal relation between gassing and a pulmonary tuberculosis beginning eight or nine years after the end of the war can hardly be established. The truly gassed soldiers deserve at least as high a pension as tuberculous soldiers whose disease is in an alleged causal connection with a short sojourn in some office far away from the field of action.—*La phtisie des gazés, Sergent, Meeting, Acad. Méd., May 3, 1927, reported in Prog. Méd., May 21, 1927, no. 21, 817.*—(*M. P.*)

Whooping Cough and Tuberculosis.—Tuberculosis has the reputation of being a

common sequel of whooping cough, adding to the gravity of the prognosis. Especially has whooping cough the reputation of exciting a latent lymphatic pulmonary or pleural tuberculosis. Objections have even been made to collective placement or institutional care of children on these grounds. The opportunity was afforded to observe an epidemic of whooping cough at the preventorium of Charly, located 15 km. from Lyons, under the Departmental Committee of the Rhone, housing 60 young girls of from 5 to 13 years of age. From its opening in 1918, up to the summer of 1925, there had been no epidemic of contagious disease. It must be recalled that whooping cough is seldom severe after the age of 5; also that hospitalized children much more often suffer bronchopneumonic or other respiratory complications. The Charly epidemic occurred in May and June, 1925. Of 32 children who had not previously had the disease out of 70, 12 contracted it. There was seldom more than slight and transient fever, and open-air life was scarcely at all interfered with. Coughing seemed to be provoked by eating rather than by activity. The duration of symptoms did not exceed four or five weeks. In short, the epidemic was of benign character. The children at Charly were recruited from antituberculosis dispensaries, all from tuberculous families, and mostly with some adenitic or bronchitic manifestations. A few had had definite stethoscopic signs previously, and these were carefully followed. With one possible exception no significant alterations were noted during or following the acute infection. This child of five, with a tracheobronchial adenopathy, developed at times disseminated bilateral râles which eventually disappeared. Some of the children showed temporarily a moderate or slight loss of weight, quickly repaired. The thoracic perimeter increased by 1 cm. or more in all, doubtless due to emphysematous distention from coughing. This increase was found to persist six months or more after recovery. *Summary: 1:* A whooping-cough epidemic occurred in 12 out of 70 children between 5 and 13 years of age in a tuberculosis preventorium. It was in all cases of slight severity and short duration, accompanied by no complication. Among children at home in neighboring villages this was not the case. *2:* At Charly the general development was not interfered with and the thoracic perimeter increased. *3:* The disease never provoked or awakened any tuberculous manifestation in these children already infected with tuberculosis. *4:* The advantages of preventorium care for such children far outweigh any possible dangers from acute respiratory epidemics of this nature.—*Coqueluche et tuberculose, F. Monisset, Rev. d. l. Tuberc., August, 1926, vii, 592.—(A. P.)*

Influenza and Pulmonary Tuberculosis.—In order to elucidate more thoroughly the relation of influenza to pulmonary tuberculosis, the author studied the statistics of a country which was not particularly affected or involved by the world war. If the figures of Stockholm are examined on a yearly basis, there was no increase of tuberculosis deaths noted either for the influenza-epidemic period of 1914–1915 or that of 1918–1919. These figures, however, prove to be deceptive, since a more careful analysis of the monthly figures disclosed that while in normal years the minimum in the mortality of pulmonary tuberculosis occurred in the fall months, the January figures were comparatively low, and the maximum occurred in May, while in December, 1914, and January, 1915, as well as in October and November, 1918, there was a marked increase of tuberculosis mortality. The figures for September and December of 1918 and January and April, 1919, also were still strikingly high. The influenza mortality curve shows a high point in the 1918 epidemic in the months of October and November, and in all the months in which there was an abnormally high tuberculosis mortality the influenza figures were also high. It is, therefore, evident that the influenza epidemic of 1914–1915 and the great epidemic of 1918–1919 were associated with an unquestionable increase in mortality from pulmonary tuberculosis. It is, therefore, evident that influenza must have a deleterious influence upon tuberculosis.—*Grippe und Lungentuberkulose. Mortalitäts-statistische Ergebnisse, E. Lindhagen, Ztschr. f. Tuberk., 1926, xlvi,* 321.—*(H. J. C.)*

Milk and Tuberculosis.—It is customary to recognize three types of tubercle bacilli, human, bovine and avian. It is likely that there are several intermediate strains of bacilli, which as yet cannot be recognized with certainty, and it is not possible to say without bacteriological and animal tests to which group those from any lesion belong. Bovine infections in human beings rarely cause pulmonary lesions; in fact, they seem to be antagonistic to each other, and it is possible that a primary bovine lesion, such as enlarged cervical lymph nodes, may produce immunity against pulmonary tuberculosis for life. Should this theory prove correct, the beneficial effects of sterilization of tuberculous milk may be followed by diminished resistance to human pulmonary tuberculosis. The practical measures that

should be taken against bovine infection are eradication of tuberculosis from dairy cows and pasteurization of all milk for human consumption. Eradication will for a long time be impossible; pasteurization is a safe and certain remedy, as evidenced by the excellent results following its compulsory use in New York and other American cities. Over a period of 20 years the author has subcultured every month certain virulent cultures of tubercle bacilli. The present growth represents the 241st generation. Every year since 1906 these bacilli were injected into animals to test their pathogenicity; until 1913, that is, the 84th generation, no change in their virulence was noted. After that time attenuation became marked, and in a series of inoculations of these bacilli into animals in 1914 they were observed to be avirulent. These experiments prove conclusively that virulent tubercle bacilli can be attenuated to such a degree as to be avirulent and nonpathogenic to highly susceptible animals. For the purpose of immunizing calves a vaccine was prepared from attenuated cultures of human bacilli. It is a bacillary emulsion of killed bacilli, and contains all the products of the bacillus. Living bacilli are never used; they are destroyed by heat before preparation. During the last four years over 600 calves in valuable pedigreed herds have been vaccinated by careful veterinary surgeons, and tuberculin tests at intervals of six months have so far been most satisfactory; the duration of immunity in 120 calves has been over 3½ years. An attempt has been made to immunize children in a tuberculosis colony. It is yet too early to draw conclusions from the work. The author believes that it is possible to immunize cattle against ordinary infection by using killed cultures of attenuated human tubercle bacilli in precisely the same way that we can give immunity to man against ordinary infection of typhoid and paratyphoid by using dead cultures of typhoid bacilli. Animals cannot withstand large doses of virulent bacilli as a test of immunity, and there is no necessity to give them. Our aim is to protect animals and children against the ordinary infection they are likely to meet with in life, and not against a lethal laboratory dose of virulent bacilli. It is not necessary to use living microörganisms to produce a relative immunity against tuberculosis.—*Tuberculosis and Milk, N. Raw, Brit. M. J., February 26, 1927, no. 3451, 373.*—(*B. T. McM.*)

Effect of Inhalation of Coal Dust on Experimental Tuberculosis.—In view of the favorable effect of the inhalation of certain dusts in industry, animal experiments were tried, to determine the effect of the inhalation of coal-dust, free from irritating particles, upon tuberculosis. The experiments investigated the effect of the inhalation of coal-dust upon previous tuberculous infection, as well as the effect of coal-dust on the healthy lung and upon tuberculosis in animals that had inhaled coal-dust over a long period. Even though the coal-dust particles were found in the alveolar epithelium and interstitial tissues, and in some cases had already entered the subtracheal lymph nodes, there was found no increased connective-tissue formation nor a change in the form of resulting tuberculosis. —*Zur Frage der Einwirkung von Kohlenstaubinhalation auf die Bindegewebsentwicklung in der Lunge. Experimentelle Untersuchungen am Kaninchen. I. Tl.: Die Einwirkung der Kohleninhalation auf die Lunge des Kaninchens bei vorhergehender Tuberkulöser Infektion, K. Henius and O. Richert, Ztschr. f. Tuberk., 1926, xlvi, 123.*—(*H. J. C.*)

Mixed Infection.—Many other bacteria find an opportunity to focalize and cause changes, as well as to flood the body with toxins, when they find lodgment in the pulmonary tissues altered by tubercle bacilli. The symptoms found in the presence of these mixed infections are those of a chronic sepsis, with frequent absence of fever, tubercle bacilli and bacteria in the sputum. A neutrophilic blood picture, even in the presence of a sterile sputum, indicates the presence of a mixed infection. The disease course and prognosis of pulmonary tuberculosis are influenced by mixed infections. Therapeutically, quinine derivatives, salicylic preparations, and autovaccines are recommended. Intercurrent diseases must be differentiated from chronic mixed infection. Definite determinations of the mixed flora are made from cultures of the sputum and by bacteriological and serological blood examinations.—*Zum Begriff der Mischinfektion, Kirchner, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 247.*—(*H. J. C.*)

Case of Alleged Congenital Tuberculosis.—This is a continuation of a report on a child infected with tuberculosis antepartum or intrapartum, which ran a normal development for 120 days, although a positive tuberculin reaction was obtained on the 26th day and a determinable roentgenological pulmonary focus was found on the 106th day. The child died on the 153rd day. The following conclusions are drawn from this case: The incubation period in congenital tuberculosis can run a symptomless course, and the primary localization of hereditary tuberculosis does not run an uninterrupted

course in the lung, a circumstance which would indicate actual forces of resistance at work during this age. In this case an acute infection was the incitant to a rapid spread of the tuberculosis, and fever occurred only three days before exitus. Loss of weight was the first clinical indication of progression 20 days before death.—*Über kongenitale Tuberculose, Nachtrag zu der gleichnämigen Mitteilung in Bd. 44, Heft 2, dieser Zeitshrift. R. Kochmann, Zischr. f. Tuberk., 1926, lcv, 107.*—(*H. J. C.*)

Tuberculosis in Infants of Tuberculous Families.—A study of 97 exposed infants observed over a period of three years is reported, 73 of these being exactly observed. The number of positive cases increased from 60 to 85 per cent from the first to the fourth year; under favorable home conditions they were from 47 to 63 per cent, and under unfavorable conditions from 66 to 95 per cent. In the case of disease of the father the positive cases increased (from the first to the third year) from 48 to 57.1 per cent, while, when the mother was diseased, from 48 to 83 per cent. When the source of infection was a member of the family able to work the increase was from 21.1 to 33.3 per cent, while in the absence of ability to work it was from 64.7 to 80 per cent. In a certain case of chronic cirrhotic tuberculosis in which bacilli were never found three children became infected. The total mortality in the first to second year in favorable hygienic surroundings was 24.2 per cent and the tuberculosis mortality 8.2 per cent; and in unfavorable hygienic surroundings the respective figures were 30.2 and 23.1 per cent. The tuberculosis mortality when the source of infection was able to work was 16.9 per cent, and when unable to work 23.6 per cent. The mortality of infants infected with tuberculosis was 51.9 per cent in the case of manifest disease in the first year, while with manifest disease in the second year only 5.9 per cent died. The total tuberculosis mortality of all exposed infants was 25 per cent.—*Säuglinge und Kleinkinder in den Familien der Offentuberkulösen, Gertrud Klostermann, Beitr. z. Klin. d. Tuberk., 1926, lxiii, 523.*—(*H. J. C.*)

Tuberculosis in First Months of Life.—The prognosis in infants and young children with tuberculosis is still regarded as unfavorable, but infection during these periods can heal, and controverting statistics fail to pay attention to the fact that only progressive cases come to the attention of a clinician. The mild infections can only be found by systematic observation. The retrogression process usually requires three to four years; therefore, if Blumenberg attempts to find calcified foci in the first years of life it does not prove, in their absence, that acquired tuberculous infection is always fatal but rather that the conditions for calcification have not been fulfilled. Seventeen cases are reported, in which infection occurred with certainty during the first year of life. Roentgen pictures are presented, showing a complete retrogression of primary infiltrations in infants, and their transition into calcified foci, and especially in the form of a typical primary complex or as calcified foci of the hilum or roentgenologically visible pulmonary foci. The early appearance of a cough in infants and small children has frequently led to an erroneous diagnosis of pertussis. Further, the general well-being of the infant is very little disturbed and, not rarely, the diagnosis of tuberculosis is made relatively late, and only after clinical symptoms are positive.—*Tuberkuloseerkrankungen in den ersten Lebensmonaten, H. Langer, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 515.*—(*H. J. C.*)

Examination of Stomach Contents for Tubercle Bacilli in Infants.—The difficulty in the diagnosis of pulmonary tuberculosis in infancy and childhood lies in the fact that the child does not expectorate, and physicians do not find the examination of the stool, the pharyngeal mucus, or the gastric content useful. The author quotes Meunier's work of thirty years ago, on examination of material obtained by gastric lavage just after the first cough and before the first meal. Vibert's method of homogenization of such material makes it much easier to find tubercle bacilli in the gastric contents; and the results obtained by him and the author are presented. The method has been employed successfully in 174 cases. The technique is as follows: About 80 cc. of tepid water is introduced into the stomach and withdrawn by siphoning. In some cases in which real cavities are found in the lung, purulent sputum is obtained, while in other cases, only a few flecks of mucus are seen. If characteristic sputum is obtained, direct microscopic examination by the Ziehl-Neelsen method is all that is necessary, but in most cases homogenization is required. The liquid is centrifugated in four tubes and the precipitates united in a porcelain dish, to which is added 30 cc. of water and 10 drops of normal sodium hydroxide; the whole is heated for ten minutes, 50 cc. of water being added slowly. If the specific gravity is over 1.004, a little alcohol is added. The material is again placed in four

tubes and centrifugated for forty-five minutes, and the precipitate stained by the Ziehl-Neelsen method. The stomach contents can be kept two or three days before homogenization without destroying the tubercle bacilli. In 62 cases in which only the direct examination without homogenization was used, tubercle bacilli were found in only 10 per cent, while in 110 cases in which the method described was employed 31 per cent were positive. The method has been especially valuable in doubtful cases without definite signs of tuberculosis.—*Pulmonary Tuberculosis in Infants: Bacteriologic Diagnosis by Examination of the Stomach Contents, P. F. Armand-Delille, Am. J. Dis. Child., October, 1927, xxxiv, 547.*—*(P. J. W.)*

Examination of Stomach Contents for Tubercle Bacilli in Infants.—After homogenization and centrifugation of gastric contents it was possible to demonstrate tubercle bacilli in 31 per cent of infants and young children, who with more or less justification had been considered as tuberculosis suspects. In some of these patients neither physical signs nor X-ray shadows permitted the diagnosis of pulmonary tuberculosis. This method is much simpler and more accurate than the demonstration of tubercle bacilli in the feces.—*Le diagnostic bactériologique de la tuberculose pulmonaire des jeunes enfants par l'examen du contenu gastrique, P. F. Armand-Delille and J. Vibert, Meeting, Acad. Méd., March 15, 1927, reported in Prog. Méd., March 26, 1927, no. 13, 479.*—*(M. P.)*

Tuberculosis of Labyrinth in Infant.—A case of tuberculosis of the labyrinth was reported in an infant. Microscopically no typical tubercles were found, and, although the pulmonary findings and the skin reaction did not indicate tuberculosis all other evidence pointed to this being the condition. —*Über tuberkulöse Labyrinthitis, F. Marx, Beitr. z. Klin. d. Tuberc., 1926, lxiii, 871.* —*(H. J. C.)*

Tuberculosis of Infants and Children. —There were primary pulmonary infections in 92.7 per cent, or 38 cases, of a total of 41 children of ages 1½ to 13 years examined postmortem. In 2 cases there was an unquestionable extrapulmonary infection. In one case the portal of entry was not clear, but it was possibly a primary pulmonary infection. Among the 38 cases with definite pulmonary infection there was a primary *Affect* discernible in 36. Of these 36 cases, 33 had a single primary focus, while three cases had two foci. A relation between the extent of the lesion and the age of the child was not discernible. Among the 39 foci there were all transitions from caseous lesions to cavities, with evidences of healing, and, in addition, transformations from caseous lesions to calcifications. In infants as a whole there was no evidence of healing, the primary lesion being caseous or cavernous. The youngest case with anatomical healing was a 1¾ year old girl, with a caseous calcified primary lesion of pea-size. Of the 39 primary foci, 23 were in the right lung and 16 in the left, the right upper lobe predominating. Almost all the foci were located subpleuraly, and in the majority there was an adhesive pleuritis. Anatomical changes of a haematogenous character were found in 34 cases, and 29 had macroscopic tuberculous changes in the lymph nodes of the tributary bronchomediastinal region to the venous angle. Three cases are given in detail. One was a so called lymphatic endogenous reinfection. In the second case there were macroscopic lymphatic changes between the primary focus and the hilum lymph nodes, and in the third, an 11-year-old girl, there was the picture of adult phthisis, in which, however, cavernous changes were absent, and an ulcerative tuberculosis of the digestive tract predominated.—*Weitere Mitteilungen über die Tuberkulose bei Säuglingen und Kindern, A. Ghon and H. Kudlich, Ztschr. f. Tuberk., 1926, xlvi, 391.*—*(H. J. C.)*

Artificial Pneumothorax in Infants.—Three hundred therapeutic artificial pneumothoraces were done since 1922 in infants suffering from pulmonary tuberculosis. In the majority of cases the pneumothorax was unilateral; in a few bilateral. A large number of complete cures are reported. The ulcerative lesions of pulmonary tuberculosis in infants usually go on to a fatal termination, and artificial pneumothorax offers the only means of halting this evolution in a large number of cases.—*Valeur du pneumothorax artificiel dans le traitement de la tuberculose de l'enfant, P. F. Armand-Delille, meeting, Acad. de Méd., May 10, 1927, reported in Prog. Méd., May 28, 1927, no. 22, 865.*—*(U. E. Z.)*

Artificial Pneumothorax in Children. —Out of 73 patients presenting indications for artificial pneumothorax the procedure was carried out in 60, of which 49 were able to continue the treatment. In 34 of the 49 cases a favorable result was obtained. In the majority of cases there was disappearance of bacilli and increase in weight. All cases became apyretic. Pleural effusion occurred in 30 per cent, and in only one-

half of these did it offer any impediment to the continuation of the procedure. Lesions appeared in the contralateral lung in two cases. Three of the favorable cases were less than two years of age.—*Nouvelle contribution a l'étude du pneumothorax thérapeutique dans la tuberculose pulmonaire infantile, Armand-Delille and Vibert, Meeting, Soc. Méd. d. Hôp., June 10, 1927, reported in Prog. Méd., June 25, 1927, no. 26, 1018.—(U. E. Z.)*

Tuberculosis in Childhood.—Many infants become infected with tuberculosis, but they so control the bacilli that they go through life without ever developing any manifestation of tuberculous disease. In a group of 100 children, found to be tuberculous before the second year, the mortality after an observation period of five years was less than 10 per cent. The remainder of the group are apparently healthy boys and girls. The most favorable period for infection is between the second or third year of age to about the period of puberty. In childhood the lymph nodes function as filters more efficiently than at any other period of life. Bacilli may live for long periods within lymph nodes without causing any changes appreciable by physical signs or roentgen-ray examination. Many children react positively to cutaneous tests without evidence of disease. Lymph nodes may become enlarged and the process may be sufficiently controlled to prevent tissue destruction. Rarely are more than 55 per cent of children infected before fifteen years of age. In a group of 6,000 children, approximately 45 per cent of the boys and 47 per cent of the girls presented evidence of tuberculous infection as revealed by the cutaneous tuberculin reaction. In the Lymanhurst (Minneapolis) outpatient department the children, after examination, have been grouped as follows: (1) children negative to tuberculosis and tuberculous infection; (2) children with tuberculous infection without evidence of tuberculous disease, cases that have a positive tuberculin reaction and no other signs or symptoms; (3) tuberculous suspects; (4) masked juvenile tuberculosis; (5) tuberculosis of the lymph nodes in regions where there are enlarged lymph nodes; and (6) tuberculosis of the the lungs, bones, etc. These cases present positive findings. In the diagnosis of lymph-node tuberculosis a history of exposure may be of considerable value, but its absence does not rule out tuberculosis. Physical findings are of little value except when the enlarged nodes are near the surface of the body. Such signs as the D'Espine's, Eustace Smith, and interscapular dulness, are of little avail. They were rarely in agreement with roentgen-ray findings. The cutaneous tuberculin test is helpful. The blood-sedimentation and auto-urine tests are of little help in this type of disease. The tubercumet and Larson ring test are usually negative except in clinically active tuberculosis. The vital-capacity test is valuable for the exclusion of pulmonary involvement. The most outstanding factors in the diagnosis of tuberculosis of the lymph nodes located remotely from the surface are history of constitutional symptoms, positive cutaneous tuberculin reaction, and evidence of disease in the stereoscopic plates which cannot be accounted for otherwise. In differential diagnosis chronic nontuberculous foci of infection must be carefully considered, especially those of the paranasal sinuses. Tuberculosis of the lymph nodes heals perhaps more readily than tuberculosis in any other part of the body. The treatment of this type of tuberculosis is along the line of conservation of energy, proper and sufficient food intake, close medical and nursing supervision, and heliotherapy. In occasional cases special measures are used, such as roentgen-ray, radium and tuberculin. Aspiration of pus before rupture, if close to the surface, is done. Pulmonary tuberculosis in children is far more common since the advent of careful roentgen-ray studies. It may be either the progressive infantile or adult type. Physical signs are less marked in children suffering from the adult type than in adults. Râles are found when the disease has become very extensive. Sanatorium care is indicated in these cases, or they may be treated at home. Avoidance of exposure in infancy and schools for tuberculous children are important prophylactic measures.—*Tuberculosis in Childhood, J. A. Myers, J. Am. M. Ass., May 7, 1927, lxxxviii, 1457.—(U. E. Z.)*

Tuberculosis in Childhood.—The prognosis of active pulmonary tuberculosis in childhood is bad in inverse proportion to the increasing age of the patient. After tuberculous cervical adenitis pulmonary involvement is relatively uncommon. Involvement of bronchial nodes with small discrete pulmonary foci gives a favorable prognosis under proper treatment, as is also the case in tuberculosis of the pleura without pulmonary involvement. Children over three years of age who react to tuberculin without clinical evidence of tuberculosis should show a large percentage of arrests if protected against reinfection and properly supervised. The child, especially the infant, must be separated from any active

focus to prevent massive or repeated infection. In the absence of any recognized specific biological prophylaxis, the principles involved in nonspecific constitutional treatment are of prime importance in preventing infection from developing into clinical disease. In the treatment of active disease, rest, fresh air, appropriate food and occasional laxatives are the chief factors. Pneumothorax is applicable to certain selected cases. Ultraviolet radiations and direct sunlight are of importance also, but must be applied discriminatingly.—*Tuberculosis in Childhood: Prognosis, Prophylaxis and Treatment, J. C. Gittings, F. W. Lathrop and S. A. Anderson, J. Am. M. Ass., October 22, 1927, lxxxix, 1415.*—(*G. L. L.*)

Antituberculosis Measures for Early Childhood.—The factors which condition tuberculous infection in childhood are (1) infecting dose and (2) receptivity of the soil. The degree of contagiousness of the infecting source, the intimacy of contact, and the age of the subject infected, come to dominate the etiological history. Hess, of New York, has shown that from birth to the age of one year infantile tuberculous mortality presents its maximum. Two objects are to be sought: (1) to lower this infantile mortality (about 30 per cent), and (2) to avoid the development of a latent tuberculosis which will constantly burden the individual through life and be a source of chronic disease to the adult. The antituberculosis specialist ought to be at once clinician, hygienist and sociologist. A survey, based on personal visits, is presented of the problem and means of coping with it in various countries, as follows: *Austria:* It would be surprising if Pirquet's important discovery (of widespread early tuberculous infection) had not a considerable influence here on phthisiology and preventive medicine, and the subject of tuberculous infection in the child has been a foremost topic of clinical conferences. The three large hospital clinics of Pirquet, Moll and Hamburger, with their outside consultations have become effective centres of prophylaxis. Provisions are made by the clinics to receive infected children, remove them from further contact, and treat them by hygienic-dietetic methods. In some cases the children are placed in healthy families. It appears, however, that the profession in general does not possess the means for an extensive campaign, and that there are few opportunities for placement and no special laws. The dispensary at Gratz expects to remedy some of these deficiencies, especially as to placement. *Czechoslovakia:* The antituberculosis campaign is of recent creation and the *Oeuvre Grancher* plays a prominent part. The Masaryk League has established a Children's Camp at Postupice. At Tatra there exist splendid preventoria and stations for children over two years, but nothing for the very young child. There is, however, a remarkable antituberculosis organization among the railroad workers, supervised by the companies. Their families are systematically and periodically examined. *Hungary:* There has been little official work here, but the campaign against infant mortality generally has been well waged, and with simple coördination of existing agencies could be wonderfully effective. The American Red Cross has founded an *Oeuvre* controlling 76 dispensaries, an infirmary, school nurseries, etc. There is a magnificent children's clinic at Budapest, linked with dispensaries, medical profession, and placement facilities, but in general prophylaxis is an individual medical matter, and not systematic. *France:* The *Institut Pasteur* is the most important centre of contact between French medicine and representatives of learned bodies and the antituberculosis group. Within its walls unite government representatives, biologists, physicians, hygienists, sociologists, and public-health nurses. The direction of the antituberculosis campaign is under Léon Bernard, who has created an "antenatal prophylaxis," in which the tuberculous prospective mother is advised well in advance of the necessity of separation from her child. This service leads to and depends on a coördination between maternity services, clinics and dispensaries. The Léon-Bourgeois Dispensary has an associated "observation nursery," working hand in hand with dispensaries, Office of Social Hygiene of the Seine, hospitals, and maternity services, and with several centres of the *Placement Familial des Tout-Petits*, established at the instigation and with the collaboration of Mme. Seligman, its social assistant. These centres are also under the supervision of Bernard. The *Oeuvre Grancher* formerly limited its work to children over three years old, but recently the placement plan, under its secretary, Armand-Delille, has been extended to small children. At Lyons an effective plan for the protection of young children has been realized through the efforts of Mouisset and Courmont. At Paris, the Office of Social Hygiene of the Seine devotes half of a budget of 15 million francs to childhood work, largely among very young infants. Publicly, and as regards legislative measures, French medicine lags behind, and socially the work has hardly begun. *Belgium:* The powerful *Ligue Nationale de l'enfance* disposes of a budget of

12 to 15 million francs annually, and has created a considerable number of establishments for tuberculosis. There is also a *Ligue nationale contre la tuberculose*, but between these two organizations there is little coöperation, nor does the campaign against tuberculosis in childhood seem to be rationally conducted. There has been little effort to link up with the dispensaries. There do exist, however, numerous fine preventoria, fresh-air schools and temporary colonies, such as at Knoke-sur-Mer. *England:* Theoretically, at least, childhood prophylaxis has not assumed an important part in the campaign. Clinically, detection of early infection and employment of the tuberculin reactions are little practised. But the legislative hygienic armament in this country is so powerful that indirectly childhood prophylaxis is accomplished. Notification of cases permits of rapid handling, thanks to the intelligent coöperation of practising physicians, the rapid placement of bacilliferous cases, the isolation at home under the supervision of visiting nurses, and the collaboration with dispensaries. Children's consultations are numerous and well utilized, and there is a strong central authority in the Medical Officers of Health. At Eastbourne this officer has created a remarkable maternity and nursery service. He himself knows personally almost all the bacilliferous cases in his jurisdiction. Placement in the country is also undertaken when there is no family capable of bringing up the child. *Holland:* Childhood prophylaxis has an important place in the program of tuberculosis work but there are few facilities for the very young. Physicians at the dispensaries of Leyden, the Hague, and Amsterdam are alive to the necessities. *Switzerland:* Like France this country has been deeply penetrated by childhood prophylactic work. Organizations for carrying it on are numerous, dispensary relations generally established, and there exist special nurseries and *petites familles* (children's groups). The canton of Vaux has established medical insurance for children. Dispensaries, such as that at Lausanne, take an active part and in this region tuberculous meningitis has become very rare. *Summary:* As regards prophylaxis in early childhood, science is twenty years ahead of practice. The preservation of later childhood is better realized, although much is still lacking. In Austria, France and Switzerland especially, medical agencies are well oriented but have only begun to accomplish their objects. Avoidance of infantile contagion is of first and utmost importance, but too often the effort is in vain. Both infantile placement and hospitalization of contagious tuberculous persons cost money, but this of itself is a weak argument when one considers the numerous institutions for the treatment of manifest tuberculosis of all kinds, and preventoria for those who carry occult tuberculosis as the result of childhood infection, as well as the loss (30 per cent of deaths from all causes) due to tuberculosis in the first year of life. The separation of children from sources of infection should be possible of accomplishment through persuasion, aided by the work of visiting nurses and educational propaganda. Placement in the country is only one means. Lack of technique and coördination of efforts should be blamed more than lack of money, and lack of unity and firmness of direction of existing agencies. Too much attention is given to magnificent constructions to house future chronic tuberculosis patients, and in too many preventoria the children are not properly selected nor is there a sufficient relation with dispensaries. Physicians must be more alive to the significance of scientific discoveries and to their social obligations.—*La préservation de la première enfance, P. Labesse, Rev. d. l. Tuberc., February, 1926, vii, 88.—(A. P.)*

General Symptoms of Tuberculosis in Children.—The manifestations of tuberculosis in children are divided into (1) specific symptoms (localization and local reaction), (2) concomitant or resultant symptoms (fever, night-sweats, cough, etc.) and (3) general symptoms (loss of appetite, weakness, etc.). The general symptoms have a more individual character than the symptoms of the first two groups and are dependent upon the general make-up of the child. In the lesser frequency of local and concomitant symptoms the general symptoms in tuberculosis of childhood frequently stand in the foreground. Observation of the general factors should be based upon the knowledge of the child's nutrition, habits and activities before the tuberculous disease occurred, which will then lead to a proper diagnosis and prevent errors in therapy. The various groupings are studied according to the modified Ligeand classification into such groups as "muscular," "digestive," "respiratory" and "cerebral," and from this is obtained important and early information on the basic specific process.—*Die Allgemeinsymptome der tuberkulösen Kinder, C. Coerper, Beitr. z. Klin. d. Tuberk., 1926, lxiii, 419.—(H. J. C.)*

Frequency of General Symptoms of Tuberculosis of Childhood.—The matter of general symptoms in childhood tubercu-

losis is elucidated from the records of 69 fatal cases of tuberculous meningitis, of which one-half began with sudden onset following excellent health and without the slightest suspicion of the presence of tuberculosis. Only slightly over one-quarter of the children presented diagnostically valuable general symptoms without the tuberculous focus being clinically determinable. Intrafamily infection occurred in two-thirds of those dying within the first 15 months of life, and one-third of those in later life. It is pointed out that in combating childhood tuberculosis the extrafamily sources should also be made harmless, which will be more easily accomplished with the registration of all forms of meningeal, bone and joint tuberculosis.—*Über die Häufigkeit der Allgemeinerscheinungen bei Tuberkulose im Kindesalter, H. Schlack, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 536.—(H. J. C.)*

Cough and Tracheobronchial Adenopathy in Children.—It is well known how frequently children with repeated bronchitis and cough are labelled "bronchial tuberculosis." Recently Debré, Bernard and Vitry have called attention to this abuse, and Nobécourt, Marfan and others, by means of tuberculin tests, have fully shown that a certain number of bronchial adenopathies are not tuberculous. The real difficulty in the diagnosis of tuberculous bronchial adenopathy is that the stethacoustic signs are subtle and untrustworthy and that the radiological findings of mediastinal and hilar shadows are often of questionable significance. Less than 10 per cent of children with cough show an X-ray picture undoubtedly due to lymph-node lesions. Besides, it is quite possible that certain tuberculous lymphatic inflammations may be transparent to the X-rays. The present study concerns 401 children, aged 2 to 12 years, examined at the antituberculosis dispensary, and submitted to clinical, radiological, bacteriological and social investigation. All were given the tuberculin skin test, repeated at weekly intervals if negative. Among this group were 25 who were shown to be suffering from bronchiectasis, true asthma or pleurisy. The remainder were divided into two groups *1:* Those presenting undoubted radiological evidence of adenopathy, 22. Most of these showed a positive tuberculin cutireaction. Less than half of these had bronchitic symptoms. *2:* Those with chest pictures approximating normal, 354. Of the total 376, 130 were subject to cough and bronchitis. Among children with a positive cutireaction 26 per cent suffered from bronchitis; of those with a negative test, 42 per cent. In other words, between the ages of 8 and 12 years there are twice as many coughers among those not infected with tuberculosis. Actually tuberculosis seems to play but a minor rôle in causing chronic cough and bronchitic attacks. Rhinopharyngeal infections, often consequent to adenoids, are one of the chief causes of nontuberculous bronchial adenopathy in childhood. Such rhinopharyngeal lesions were found in this group in 40 per cent of cases of bronchitis with negative cutireaction, and in 30 per cent of those cases with positive reaction. This would seem to indicate that even where latent tuberculosis may exist, one must frequently look elsewhere for the cause of a bronchitis—to nose or throat defects, bronchopneumonia, measles, whooping cough, hereditary syphilis. While the proportion of positive reactions for the entire group of children from 2 to 12 years was 62 per cent, for those in a bacilliferous environment it was 82 per cent, but for the bronchitic in such environment only 66 per cent. Thus, "phthisical bronchitis" seems to occupy a very small place among the clinical forms of infantile tuberculosis. From the diagnostic point of view, habitual cough should not suggest tuberculosis, still less tuberculous adenopathy. Etiologically, repeated bronchitis in infancy leads to bronchiectasis or asthma, usually unassociated with tuberculosis. A certain number of cases are due to essential emphysema, which has nothing in common with tuberculosis.—*Enfants tousseurs, adénopathie trachéo-bronchique et infection tuberculeuse, A. Martin, Rev. d. l. Tuberc., December, 1926, vii, 857.—(A. P.)*

Underweight Clinics.—In three years the Massachusetts Department of Public Health has examined 50,000 school children in three groups: (1) those 10 per cent or more underweight for age; (2) those exposed to tuberculosis in the homes; and (3) those neither contacts nor underweight, but known to be in poor health. These children were later grouped in the following classes: Those with pulmonary tuberculosis (adult type of tuberculosis), those with hilum tuberculosis, the suspects, and normal children. An analysis was made of the results of examination of 24,758 children. The tuberculin reaction proved that there was very little difference in the percentage of urban and rural reactors and that the percentage of reactors in contacts is approximately twice that of the noncontact group. In the contact group there were many more girls at ages of 12 to 15 who were found to have hilum tuberculosis,

although as a whole group there was very little difference in the incidence of hilum tuberculosis in boys and girls. Many more girls than boys in the contact hilum group were underweight. There was an increase of nearly 10 per cent in the number of non-contact reactors in the 15 per cent underweight group, as compared with those of average weight, leading to the suspicion that malnutrition is probably the result of the tuberculous infection rather than the predisposing cause. Of children exposed to pulmonary tuberculosis 50 per cent become infected by the time they are six years old, and one year later they show a high percentage of hilum tuberculosis. Pulmonary tuberculosis was from two to three times as common in girls as in boys. The fact that 20 per cent of the hilum cases in the contact group were in normal or overweight children is definite evidence that all children should be thoroughly examined for tuberculosis, regardless of weight.—*Observations in the Underweight Clinics in Massachusetts, D. Zacks, J. Am. M. Ass., August 27, 1927, lxxxix, 670.—(G. L. L.)*

Vital Capacity of Negro Child.—This study is based on observations made on 1,564 white children and 1,254 Negro children. The children came from rural and urban localities. The children were grouped according to sex. The standing height, weight, stem-length and age were ascertained. *Conclusions: 1:* The Negro children have vital capacities lower than white children of the same age. The difference is greater in boys. White girls exceed Negro girls by 7.2 per cent, and white boys exceed the colored by 12 per cent in vital capacity. *2:* Negro children have vital capacities lower than white children of the same body-weight. The white girls exceed the colored girls by 10.2 per cent and the white boys exceed the Negro boys by 14.9 per cent in lung capacity. *3:* Negro children have vital capacities lower than white children of the same standing height. The white girls show vital capacities averaging 6.8 per cent higher than Negro girls and the white boys have vital capacities that average 11.2 per cent higher than those of Negro boys. *4:* Negro children have vital capacities practically the same as those of white children of the same stem-length.—*The Vital Capacity of the Negro Child, F. L. Roberts and J. A. Crabtree, J. Am. M. Ass., June 18, 1927, lxxxviii, 1950.—(U. E. Z.)*

Blood Calcium of Tuberculous and Normal Children.—Long ago Robin maintained that tuberculosis was accompanied by "demineralization." Ferrier then claimed that calcium deficiency prepared the soil for tuberculous invasion. Finally the elder Sergent insisted on the importance of calcium metabolism in tuberculosis, and systematized a treatment to accomplish "recalcification." Those who consider decalcification an important feature of tuberculosis support their views with chemical, anatomopathological and therapeutic evidence, not all of which is indisputable or proven. To determine chemically the balance of calcium exchange of the body is a difficult and complicated matter, as one must consider the amount ingested and that excreted in both urine and feces, by methods admittedly inexact. Few have troubled even to attempt such a comparison. Robin considered the evidence of morbid anatomy of greatest importance. He found that after incineration the quantity of mineral ash from a tuberculous organism was constantly lower than from a healthy one, and that this was especially true of the bones. Withdrawal of calcium from these reserves was assumed, and the finding of calcified nodules in the lungs adduced as further evidence. Therapeutic arguments included the absence of tuberculosis in lime-kiln workers. However, as to the former, it has not been shown that the demineralization found was not the result of the progressive cachexia rather than tuberculous infection *per se.* Calcium administration rests on insecure grounds, since the normal food ration contains the calcium necessary to the body, and if this cannot be utilized it may be doubted that an excess will be. Studies of blood calcium have shown a rather striking stability that is not altered by increasing the calcium in the diet. However, it was decided to make these special studies on a group of children, especially as diminution of bone calcium in them, associated with phosphorus deficiency, shows itself chemically by rachitic lesions, and of blood calcium by typical spasmophilia. DeWaard's method of precipitation from blood-serum as calcium oxalate was used, 1 cc. of serum being employed. The figures for normal infants varied between 100 and 120 mgm. per 1000 cc.; in spasmophilia the figures varied between 70 and 88 mgm. Of 22 tuberculous children, of whom 12 were very young, and in whom tuberculosis of all kinds and degrees existed, the figures varied in 19 between 99 and 110 mgm. Three showed lower figures,—94, 90, and 83 mgm. The two former were the most cachectic and athrepsic, and the latter had a caseous pneumonia of tuberculous nature. It is concluded that tuberculous invasion appears not to modify the blood-calcium content. Nevertheless this fixity of the blood-serum content by no means indicates

whether the capacity of the tissues to fix calcium may not be changed, and this latter problem demands careful study. For its solution other methods are demanded.—*La calcémie chez l'enfant et particulièrement le nourrisson tuberculeux, R. Debré, A. Goiffon and M. Guyonnand, Rev. d. l. Tuberc., February, 1926, vii, 80.—(A. P.)*

Diagnosis of Pulmonary Tuberculosis in Children.—A history of exposure, low fever, rapid pulse and poor nourishment are sufficient grounds upon which to make a diagnosis of a "potentially tuberculous child" and to start immediate treatment without waiting for further observations to establish a definite diagnosis. Such delay is dangerous, for the disease at a time when it can be arrested is in the lymph nodes and not in the lung. When the roentgen-ray and physical signs are convincing, the diagnosis has been made too late. Caseocalcareous lymph nodes, identified in roentgenographs, especially lateral plates, by the presence of flakes of calcification in their circumference, are of great clinical importance, indicating, although there are no physical signs that the process is not arrested.—*The Diagnosis of Tuberculosis in the Child's Chest, K. Dunham, J. Am. M. Ass., October 22, 1927, lxxxix, 1413.—(G. L. L.)*

Tuberculin Diagnosis in Childhood.—Moro's procedure of rubbing very concentrated old tuberculin into the skin, preferably after cleaning it with ether, is recommended. The reaction is considered to be positive if small red nodules appear twenty-four hours after application. Only during the first year of life does a positive test indicate tuberculous disease. If the reaction is negative, it may be repeated after one week, or one injects 0.01 mgm. old tuberculin subcutaneously. If this does not produce a reaction, it is usually safe to inject 1 mgm. two days later. After subcutaneous administration a reaction should be considered positive only when swelling and reddening are more intense after two days than after one, and when they persist for at least three days. While a positive test has only a very limited clinical significance, a negative test is of utmost importance, because it excludes tuberculosis as the etiological cause of whatever clinical symptoms may be present.—*Die Tuberkulindiagnostik bei Kindern in der Praxis, F. Hamburger, Wien. klin. Wchnschr., July 7, 1927, xl, 875.—(M. P.)*

Tuberculin Ointment for Diagnosis in Children.—The diagnostic application of tuberculin in the practice of pediatrics has been neglected. It is a valuable procedure and is destined to come into much wider use. Tuberculosis is often diagnosed in coughing children or in those who appear to be in bad condition but in whom the largest doses of tuberculin do not bring out a reaction. Moreover, such children are frequently sent to a sanatorium at useless expense. The tuberculin reaction is negative in cachexia, miliary tuberculosis, measles and certain other diseases, but that does not disqualify the method, and in very young children a strongly positive reaction usually indicates a "florid infection." A roentgenological examination of infants reacting to tuberculin is an indispensable necessity. One reason that the test is not more widely applied in practice rests on the fear that people have of vaccinating infants. This objection, however, could be met by the use of a tuberculin salve, several of which are available. The results from the application of the strongest preparations yield valuable statistical and epidemiological information because they bring out the highest percentage of reactions. In an ambulant practice, it is desirable to use a weaker tuberculin. A series of tests done with several different preparations of tuberculin (*Dermotubin, Ektebin, Percutan-Tuberculin Moro*) showed that *Ektebin* was superior, giving positive results in 6 per cent more cases and stronger reactions in 27 per cent more cases than *Dermotubin*, and similar percentages when compared with the others in the list. *Ektebin* produces a higher incidence of positive reactions, particularly in individuals above the age of four years, and may in some way be related to keratolytic substances. This preparation has been applied to more than 2,000 children without one bit of evidence of bad effect.—*Zur Tuberkulindiagnostik im Kindesalter, W. Landau and H. Mossbach, Deutsche med. Wchnschr., October 14, 1927, liii, 1765.—(H. S. W.)*

Tuberculin Skin Reactions in Children.—Autopsies performed on children with positive tuberculin skin reactions have always demonstrated tuberculous lesions. The child who reacts positively is always a bearer of tuberculous foci. A positive reaction is very rare before the age of three months. Of all the acute infectious diseases only measles inhibits a positive response. In children the skin reaction is a valuable clinical method of investigation. In the infant, especially when less than one year of age, its value is absolute. In older children the negative reaction gives the most valuable information. The young child usually dies of tuberculosis before reaching the cachectic

stage, and the reaction remains positive during the last stages of the illness, even up to the day preceding death. The cutaneous reaction, by revealing the presence of tuberculosis at its incipiency, has helped to better the prognosis of the disease. Its presence or absence calls forth proper hygienic measures which are often most efficacious because of their early application.—*La cuti-réaction à la tuberculine chez l'enfant, Lesne, Marquézy and Samitca, Prog. Méd., March 5, 1927, no. 10, 345.—(U. E. Z.)*

Skin Reactions to Human, Bovine and Avian Tuberculins in Hilum Tuberculosis.—Observations were made on 306 children attending the Lymanhurst School for Tuberculous Children, Minneapolis. Of the entire group, the majority reacted to more than one type of tuberculin. Instead of employing the usual Pirquet scarification method, a single stick puncture was made with a needle through a small drop of tuberculin, penetrating through the deeper layers of the epithelium. Strongly positive reactions were obtained as follows: human type 32.0 per cent, bovine 27.1 per cent, and avian 6.5 per cent. Moderate reactions: human 29.7 per cent, bovine 35.3 per cent, and avian 35.3 per cent. Slight reactions: human 12.1 per cent, bovine 9.8 per cent and avian 24.8 per cent. Negative reactions: human 26.2 per cent, bovine 27.8 per cent, and avian 33.4 per cent. Thus human and bovine tuberculin are of approximately equal value in detecting cutaneous tuberculin sensitivity, and both are definitely superior to avian tuberculin. The occurrence of stronger reactions to bovine and avian than to human tuberculin apparently is not exceptional. If infection by the avian bacillus were at all common, one would expect to find a considerable number of children reacting positively to avian tuberculin and negatively to human material. But in every instance in which the avian tuberculin was positive, the child reacted positively to human or to bovine tuberculin or to both. Thus it is apparently impossible to identify the type of infecting microörganism by employing tuberculin derived from human, bovine or avian sources in performing the Pirquet test.—*Cutaneous Reactions to Human, Bovine, and Avian Tuberculins in Hilum Tuberculosis, C. A. Stewart and A. E. Collins, Arch. Pediat., xliv, 451.—(P. J. W.)*

Coincident Bilateral Pneumothorax in Children.—Two cases are reported and roentgenographic demonstrations presented. The relatively slight and easily overcome dyspnoea was noteworthy.—*Gleichzeitiger doppelseitiger Pneumothorax beim tuberkulösen Kinde, O. Wiese, Beitr. z. Klin. d. Tuberk., 1926, lxv, 259.—(H. J. C.)*

Pulmonary Fibrosis in Children.—The study of chronic pulmonary disease in childhood resolves itself into a consideration of fibrosis of the lungs in its various forms. Two of these forms are specific infections, namely, tuberculosis and syphilis. Simple fibrosis must be looked upon rather as a healing than a disease, and might be disregarded as mere scar-tissue if it were not for secondary results which are responsible for symptoms. By far the commonest cause of pulmonary fibrosis in childhood is unresolved bronchopneumonia, in many cases complicating whooping cough or measles. In nearly all cases bronchiectasis supervenes to a greater or less degree. The smaller bronchioles are usually obliterated, but the bronchi, weakened by the primary disease and frequently filled with mucus and pus, are easily distended by the action of contracting fibrous tissue. The streptococcus causes the original infection in the majority of cases, though Friedländer's bacillus, Pfeiffer's bacillus, and others may be the cause at times. Pleurisy may be a primary cause of pulmonary fibrosis in children. The pleurisies of children are the acute form accompanying lobar pneumonia, tuberculous pleurisy with effusion, and rheumatic pleurisy. In the first condition, if empyema supervenes, the collapsed lung may become fibrous, especially if the abscess is left undrained too long. Cough is rarely absent for long, however, and there is some dyspnoea on exertion. The cough is not frequent but apt to occur on change of position, as when rising or going to bed, is paroxysmal in character, and results in the production of large quantities of mucopurulent sputum. The finger tips and toes are clubbed; their skin is smooth and shiny. The physical findings are usually unilateral, and more often at the left base than elsewhere. The percussion note over the affected side varies; the breath-sounds are diminished. Dry crackling râles may be heard. Added to these may be bubbling and crackling râles of various kinds when cavities are present. The tubercle bacillus may be introduced at any time in the course of the disease. In the early stages the fibrosis may be seen roentgenologically over the damaged area, the changes in the periphery being as well marked as elsewhere. Treatment is mainly directed toward keeping the bronchial tree as healthy and free from catarrh as possible. Where conditions are bad, the disease can best be held in check by

preventing accumulation of secretions. This is best accomplished by postural drainage. Artificial pneumothorax has been tried for bronchiectasis, but it is rarely successful.—*A Lecture on Pulmonary Fibrosis in Children, H. H. C. Gregory, Brit. Med. J., July 16, 1927, no. 3471, 96.—(W. I. W.)*

Nontuberculous Fibrosis of Lungs in Children.—Of 500 pulmonary cases admitted to the High Wood Hospital for Children several were found to have fibrosis of the lung not due to tuberculosis. The points that differentiate this condition are a history of its coming on after measles, whooping cough, acute bronchitis or bronchopneumonia. Usually there is no history of tuberculosis in the family. The symptoms are chiefly those of cough with little or no sputum, and of dyspnoea and cyanosis; clubbing of the fingers occurs in two-thirds of the cases. Physically the child is poorly nourished and small, often with deformed chest. Percussion shows impaired resonance over the affected area. The breath-sounds are variable, but usually are bronchial in quality, with dry râles over the lower part of the lungs. The temperature may show a little elevation and the Pirquet test is usually negative. The X-ray assists in showing striated shadows suggestive of fibrous change and often accompanied by displacement of the mediastinal structure from contracture of the fibrous tissue. The condition is to be differentiated from tuberculosis, bronchiectasis and chronic bronchitis.—*The Differential Diagnosis of Non-Tubercular Fibrosis of the Lungs in Children, C. D. Agassiz, Tubercle, May, 1927, viii, 353.—(B. H. D.)*

Tuberculous Laryngitis and Pneumothorax in Adolescence.—Four girls, fourteen to fifteen years of age, suffering with tuberculous laryngitis and ulcerative pulmonary tuberculosis, were treated by pneumothorax. In three of these patients a complete cure of the laryngeal involvement was attained within one to one and a half years. The fourth girl developed a contralateral pulmonary lesion, collapse therapy was terminated, and she died in a severe haemoptysis. Necropsy showed definite healing of her pulmonary lesions. The frequency of laryngeal tuberculosis in adolescence and the efficacy of collapse therapy are stressed.—*La tuberculose laryngée dans la grande enfance et l'influence du pneumothorax artificiel sur la guérison, P. F. Armand-Delille and H. Caboche, meeting, Soc. Méd. d. Hôp., May 6, 1927, reported in Prog. Méd., May 21, 1927, no. 21, 817.—(M. P.)*

Pleurisy with Effusion in Children.—For the diagnosis of pleural effusions the physical signs are more reliable than the symptomatology. In infants voluminous effusions may exist without apparent symptoms because of the extreme flexibility of the thorax. The absence of breath-sounds is often less complete than in older children on account of the narrowness of the thorax and the easier transmission of the breath-sounds from the healthy side. Absolute dulness is the most valuable physical sign. The amount of the effusion and the degree of dyspnoea are rarely in proportion. The infant usually lies on the affected side, thus avoiding cardiac compression against the good lung. Pulmonary lesions are frequently obscured by the predominance of symptoms referable to a pleural effusion. An effusion suspected on the strength of physical signs may be absent or may be very scant in amount. Puncture of the pleura has been done to relieve what was diagnosed as pressure symptoms due to the effusion, and no fluid was found. Careful radiographic studies reveal in these doubtful cases an opacity which is not as uniform as that observed in massive effusions. The costophrenic angle is not obliterated. Thoracentesis should be resorted to when urgent symptoms are noted, withdrawing only a small amount of fluid at a time. To hasten the absorption of the exudate subcutaneous injections of the pleural fluid have been recommended. Horse serum and antidiphtheritic serum have been used. These methods produce no appreciable benefits over the more conservative regimen. The tuberculous nature of most serofibrinous effusions must be kept in mind, especially for the institution of early prophylaxis.—*Pleurésies à grand épanchement séro-fibrineux chez l'enfant, Nobécourt, Prog. Méd., March 12, 1927, no. 11, 393.—(U. E. Z.)*

Renal Tuberculosis in Childhood.—A child 10 years of age was first seen in 1926 with symptoms characteristic of renal tuberculosis;—haematuria, polyuria, albuminuria, and tubercle bacilli in the urine. The patient was sent away for heliotherapy at high altitude. After six months the patient returned completely cured. His general condition was very good and he had gained 4 kilos in weight. Urinary findings were normal. Heliotherapy in such patients should not be instituted after the removal of the kidney, but should be started early in order to avoid surgical intervention and to conserve both kidneys.—*Un cas de tuberculose rénale guérie par l'héliothérapie en altitude à Odeillo, Armand-Delille and Rovèche, Meeting, Soc. Méd. d. Hôp.,*

June 24, 1927, reported in Prog. Méd., July 16, 1927, no. 29, 1116.—(U. E. Z.)

Primary Tuberculosis of Mesenteric Lymph Nodes in Children.—Mesenteric lymph-node tuberculosis is frequently diagnosed as chronic appendicitis. This error is more easily made when the mesenteric node tuberculosis begins with acute symptoms, fever, and abdominal pain in the right lower quadrant. The absence of severe general effects in these cases is against appendicitis. With a chronic course and lack of acute symptoms caution is necessary in the diagnosis of chronic appendicitis, since this is rare in children. However, the difficulty in excluding a diagnosis of appendicitis is verified by the fact that 29 of 33 cases observed by the author were operated upon, and only after laparotomy was the diagnosis made. Extirpation of the lymph nodes was not undertaken. The course of the disease is usually favorable. Even large tumor masses were associated with only slight symptoms.—*Über primäre Mesenterialdrüsentuberkulose bei Kindern, M. Mettenleiter, Deutsch. Ztschr. f. Chir., 1926, cxcix, 120.—(H. J. C.)*

Fate of Children with Open Tuberculosis.—The presence of tubercle bacilli in the sputum of children need not necessarily be a serious manifestation. The number of cases with bacilli in the sputum is more common than is generally recognized. The necessity for more energetic examination of the sputum is urged, since the excretion of bacilli can occur in the presence of only the slightest clinical pulmonary symptoms.—*Über das Schicksal der Kinder mit offenen Tuberkulose, W. A. Sukiennikow, B. S. Juffa and E. O. Priss, Beitr. z. Klin. d. Tuberk., 1926, lxiv, 562.—(H. J. C.)*

Examination of Tuberculin-Reacting Cattle.—Great care is exercised in the inspection of cattle before and after death. The postmortem inspection of reacting cattle includes a very careful scrutiny of all parts of the slaughtered animal, and when properly done it can discover small isolated lesions in viscera, lymph nodes, muscles, lacteal ducts, spinal column, synovial membranes and capsules, skin, etc. A very carefully worked-out system of tagging enables the inspector to be entirely accurate in his data. Suspension, by hook, of the head, the removal of which constitutes the first manoeuvre in the examination, enables a complete examination of the tongue, masseter muscles, lymph nodes and salivary glands. Next the hide is removed, and examined especially in the region of the legs and feet. The inspector is always careful to examine the udder and supramammary lymph nodes by palpation and frequent incision, and this applies to the bronchial and mediastinal lymph nodes, lungs, and pericardium, and the liver and its lymph nodes on the posterior surface, where signs of disease are found in 12 per cent of cases. In turn follows a careful examination of the gastric and mesenteric lymph nodes, the colon and caecum, ovaries and uterus, precrural, inguinal, ischial, iliac and sublumbar nodes (the latter especially important), kidneys, peritoneum, parietal pleura, prepectoral, cervical, prescapular and axillary lymph nodes, bones and popliteal nodes. The latter are examined only in case no evidence of tuberculosis has been discovered elsewhere.—*Handling and Disposing of Reactor Cattle, E. P. Schaffter, J. Am. Vet. Med. Assn., August, 1927, lxxi (n.s., xxiv), 624.—(H. S. W.)*

Unusual Cases of Bovine Tuberculosis. *First Case:* Tuberculous infection in sheep is exceedingly rare. An emaciated sheep at autopsy showed an enlarged and caseous retropharyngeal lymph node and a caseous prescapular node. Other lymph nodes and viscera were normal. The prescapular node resembled a tuberculous node and was inoculated into a guinea pig which died thirty-six days later with typical tuberculous lesions in the spleen, liver and lymph nodes, and from these acid-fast microörganisms were recovered and demonstrated by smear and culture, although none could be detected in smears made from the original lymph node of the sheep. The strain was proved to be of bovine type since it was pathogenic for rabbits. The medium on which the culture grew was prepared from eggs and equine or bovine serum. *Second Case:* A non-reacting cow in an accredited herd that had had no reactors for nearly three years fell ill and was killed. At autopsy the mesenteric lymph nodes were enormously enlarged, some the size of a baseball. Other tissues were normal, and grossly the condition appeared to be actinomycosis. Histologically, there was no caseation or calcification, but enormous numbers of long, nonbeaded, acid-fast bacilli were revealed. A guinea pig inoculated intraperitoneally with a portion of one of the nodes died twenty-four days later with tuberculous lesions of the spleen, peritoneum and mesenteric lymph nodes. Other guinea pigs were inoculated with tissue of this one, and four weeks later reacted strongly to avian tuberculin and weakly to bovine tuberculin. A rabbit inoculated with a portion of the original mesenteric tissue, when killed six weeks later, showed only a small lesion at the

site of inoculation. A chicken, inoculated also with some of the original tissue from the cow, gradually failed in health until, forty-three days after inoculation, it became comatose and was killed and found to have a miliary tuberculosis of the liver and several tubercles in the peritoneum. Acid-fast bacilli were recovered from these areas. Acid-fast bacilli, apparently avian in cultural characteristics, were grown in culture from the tissues of the first guinea pig inoculated. —*Unusual Cases of Tuberculosis, C. A. Mitchell, J. Am. Vet. Med. Ass., October, 1927, lxxii (n.s., xxv), 108.—(H. S. W.)*

Eradication of Bovine Tuberculosis.—Thirty years ago the author maintained that cows with a tuberculin reaction but no other signs or symptoms of tuberculosis should not be slaughtered. It was proposed that herds be tested and separated into two groups, one reacting and the other nonreacting. To the latter should be added calves born in the reacting as well as those born in the other group. The nonreacting, healthy herd should be tested yearly or twice a year so as to eliminate promptly any reactors that had become infected. This is the Bang method. When herds are tested that have been long infected, it is better to test only the calves and remove them from the infected herd. By separating young, noninfected calves from the herds and maintaining the separation, there soon grows up a noninfected herd. A farmer may in the course of four to six years change from an infected to a completely noninfected herd and at but little expense. The use of separate stables, separate feeding utensils etc., is all that is necessary. Not only are the new herds noninfected; they also yield more butter and milk. The accredited-herd method employed in America, in which all reacting cattle are slaughtered, will eventually eliminate tuberculosis, but it is frightfully costly. Expensive purebred cows that react but are apparently healthy might be kept for several years and give birth to several calves. The milk from such cows should be perfectly safe after pasteurization. In Germany the Ostertag method is widely employed but is not dependable. It consists of eliminating by slaughter all cattle that show clinical signs of tuberculosis on periodical examinations. In several European countries (France, Holland) efforts are being made to induce dairymen and farmers to *voluntarily* attack the problem of the elimination of tuberculosis. The major effort is placed on rooting out all *open* tuberculosis in cattle instead of all tuberculous infection. It is essential to aid the farmer who is striving to grow a tuberculosis-free herd.—*Tuberculosis in Cattle, B. Bang, J. Am. Vet. Med. Ass., October, 1927, lxxii (n.s., xxv), 20.—(H. S. W.)*

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